

Appendix 3.6 Kentucky's aquatic habitat guild descriptions and prioritized conservation actions.

CAVE STREAMS - Aquatic Guild

The Cave Stream guild includes two species of cavefish (family Amblyopsidae). This category is based on the Cave Stream subsystem of the Riverine System located in the karst limestone regions of the Interior Plateau (Burr and Warren, 1986). It applies to streams that are associated with a larger surface opening than that of springs, and include sinking streams common in karst regions (Burr and Warren, 1986).

Species

ACTINOPTERYGII - Fish

Northern Cavefish, Southern Cavefish.

Top conservation actions for this guild.

Rank	Code	Conservation action
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- | | | |
|----------|------------|---|
| 1 | 161 | Acquisition and conservation easements of critical aquatic habitat. |
| 2 | 175 | Work with municipalities, industries, and government agencies to reduce physical impacts of non-point and storm water runoff including Total Maximum Daily Loads (TMDL's) |
| 3 | 158 | Financial incentives to protect riparian corridors and watersheds. |
| 4 | 160 | Inform and educate user groups on significance and importance of riparian corridors and watersheds. |
| 5 | 174 | Establish working groups to address various broad issues and needs that pertain to water. |
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Appendix 3.6 Continued.

LARGE RIVERS IN CURRENT - Aquatic Guild

The Large Rivers in Current guild includes eight bivalve and five fish species. This category is derived from the Big River subsystem (Burr and Warren, 1986) that includes flowing waters of main channels over firm sand, gravel, and mud substrates. It applies to the largest rivers of the state, primarily the Mississippi and Ohio Rivers (Burr and Warren, 1986).

Species

ACTINOPTERYGII - Fish

Alabama Shad, Flathead Chub, Lake Sturgeon, Pallid Sturgeon, Plains Minnow.

BIVALVIA - Mussel

Butterfly, Catspaw, Elephantear, Orangefoot Pimpleback, Pink Mucket, Ring Pink, Scaleshell, Sheepnose.

Top conservation actions for this guild.

Rank	Code	Conservation action
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- | | | |
|----------|-----|---|
| 1 | 166 | Work with dam and hydroelectric operators to enhance and protect aquatic habitat. |
| 2 | 159 | Encourage and assist in using, developing, and implementing Best Management Practices, including revision and evaluation as applied to aquatic systems. |
| 3 | 158 | Financial incentives to protect riparian corridors and watersheds. |
| 4 | 170 | Develop public aquatic education programs to inform and educate user groups. |
| 5 | 176 | Develop, encourage, and initiate local watershed improvement initiative. |
| 6 | 175 | Work with municipalities, industries, and government agencies to reduce physical impacts of non-point and storm water runoff including Total Maximum Daily Loads (TMDL's) |
| 7 | 168 | Develop mitigation plan for impacted aquatic systems. |
| 8 | 180 | Develop priorities and technology for reintroducing and enhancing aquatic populations. |
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Appendix 3.6 Continued.

LARGE RIVERS IN SLACKWATER - Aquatic Guild

The Large Rivers in Slackwater guild includes two bivalve and two fish species. This category is derived from the Big River subsystem (Burr and Warren, 1986) that includes slow-quiet pools and embayments over substrates of sand, mud, and organic debris. It applies to the largest rivers of the state, primarily the Mississippi and Ohio Rivers (Burr and Warren, 1986).

Species

ACTINOPTERYGII - Fish

Alligator Gar, Inland Silverside.

BIVALVIA - Mussel

Bleufer, Fat Pocketbook.

Top conservation actions for this guild.

Rank	Code	Conservation action
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- | | | |
|----------|-----|---|
| 1 | 166 | Work with dam and hydroelectric operators to enhance and protect aquatic habitat. |
| 2 | 159 | Encourage and assist in using, developing, and implementing Best Management Practices, including revision and evaluation as applied to aquatic systems. |
| 3 | 158 | Financial incentives to protect riparian corridors and watersheds. |
| 4 | 170 | Develop public aquatic education programs to inform and educate user groups. |
| 5 | 176 | Develop, encourage, and initiate local watershed improvement initiative. |
| 6 | 175 | Work with municipalities, industries, and government agencies to reduce physical impacts of non-point and storm water runoff including Total Maximum Daily Loads (TMDL's) |
| 7 | 168 | Develop mitigation plan for impacted aquatic systems. |
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Appendix 3.6 Continued.

LOWLAND STREAMS IN RIFFLES - Aquatic Guild

The Lowland Streams in Riffles guild includes eight fish and two bivalve species. This category is derived from the lowland subcategory of the Riverine System (Burr and Warren, 1986) that applies specifically to riffle habitats in streams having low gradients and current velocities, with substrates consisting primarily of sand, mud, and organic debris. Occurrence of riffles and shoals is low (constituting < 5-10% of stream length). Streams in this category are found in the Coastal Plain Province, including the Mississippi Alluvial Plain, Eastern Gulf Coastal Plain, and Tennessee River Plain (Burr and Warren, 1986).

Species

ACTINOPTERYGII - Fish

Bluntnose Shiner, Bristlenose Shiner, Brown Madtom, Firebelly Darter, Gulf Darter, Least Madtom, Relict Darter, Shawnee Darter.

BIVALVIA - Mussel

Mountain Creekshell, Slabside Pearlymussel.

Top conservation actions for this guild.

Rank	Code	Conservation action
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- | | | |
|----------|------------|---|
| 1 | 161 | Acquisition and conservation easements of critical aquatic habitat. |
| 2 | 158 | Financial incentives to protect riparian corridors and watersheds. |
| 3 | 159 | Encourage and assist in using, developing, and implementing Best Management Practices, including revision and evaluation as applied to aquatic systems. |
| 4 | 164 | Restoration of degraded aquatic habitat through use of programs such as Fees in Lieu, or other federal grants. |
| 5 | 160 | Inform and educate user groups on significance and importance of riparian corridors and watersheds. |
| 6 | 163 | Coordinate and implement existing Farm Bill programs, or other federal incentive programs as applied to aquatic systems. |
| 7 | 168 | Develop mitigation plan for impacted aquatic systems. |
| 8 | 176 | Develop, encourage, and initiate local watershed improvement initiative. |
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Appendix 3.6 Continued.

LOWLAND STREAMS IN SLACKWATER - Aquatic Guild

The Lowland Streams in Slackwater guild includes 12 fish and one bivalve species. This category is derived from the lowland subcategory of the Riverine System (Burr and Warren, 1986) that applies specifically to slackwater or pool habitats in streams having low gradients and current velocities, with substrates consisting primarily of sand, mud, and organic debris. Occurrence of riffles and shoals is low (constituting < 5-10% of stream length). Streams in this category are found in the Coastal Plain Province, including the Mississippi Alluvial Plain, Eastern Gulf Coastal Plain, and Tennessee River Plain (Burr and Warren, 1986).

Species

ACTINOPTERYGII - Fish

Blacktail Redhorse, Central Mudminnow, Cypress Darter, Cypress Minnow, Dollar Sunfish, Golden Topminnow, Goldstripe Darter, Lake Chubsucker, Redspotted Sunfish, Starhead Topminnow, Swamp Darter, Taillight Shiner.

BIVALVIA - Mussel

Texas Lilliput.

Top conservation actions for this guild.

Rank	Code	Conservation action
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- | | | |
|----------|-----|---|
| 1 | 161 | Acquisition and conservation easements of critical aquatic habitat. |
| 2 | 158 | Financial incentives to protect riparian corridors and watersheds. |
| 3 | 159 | Encourage and assist in using, developing, and implementing Best Management Practices, including revision and evaluation as applied to aquatic systems. |
| 4 | 164 | Restoration of degraded aquatic habitat through use of programs such as Fees in Lieu, or other federal grants. |
| 5 | 160 | Inform and educate user groups on significance and importance of riparian corridors and watersheds. |
| 6 | 163 | Coordinate and implement existing Farm Bill programs, or other federal incentive programs as applied to aquatic systems. |
| 7 | 168 | Develop mitigation plan for impacted aquatic systems. |
| 8 | 176 | Develop, encourage, and initiate local watershed improvement initiative. |
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Appendix 3.6 Continued.

MEDIUM TO LARGE STREAMS - Aquatic Guild

The Medium to Large Streams guild includes 18 bivalve and four fish species. This is a broad category that includes a large portion of the aquatic habitats in the state under the Riverine System (Burr and Warren, 1986), except for the Big River subsystem (i.e., main channels of Ohio, Mississippi, Lower Cumberland, and Lower Tennessee Rivers). It applies to flowing waters ranging in size from approximately 9 – 61 m (30 – 200 ft) in width (Jenkins et al., 1971).

Species

ACTINOPTERYGII - Fish

Northern Madtom, Western Sand Darter.

CEPHALASPIDOMORPHI - Lamprey

American Brook Lamprey, Chestnut Lamprey.

BIVALVIA - Mussel

Clubshell, Cracking Pearlymussel, Cumberlandian Combshell, Dromedary Pearlymussel, Elktoe, Fanshell, Fluted Kidneyshell, Kentucky Creekshell, Longsolid, Northern Riffleshell, Oyster Mussel, Pocketbook, Pyramid Pigtoe, Rabbitsfoot, Rough Pigtoe, Round Hickorynut, Spectaclecase, Winged Mapleleaf.

Top conservation actions for this guild.

Rank	Code	Conservation action
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- | | | |
|----------|------------|---|
| 1 | 166 | Work with dam and hydroelectric operators to enhance and protect aquatic habitat. |
| 2 | 159 | Encourage and assist in using, developing, and implementing Best Management Practices, including revision and evaluation as applied to aquatic systems. |
| 3 | 158 | Financial incentives to protect riparian corridors and watersheds. |
| 4 | 176 | Develop, encourage, and initiate local watershed improvement initiative. |
| 5 | 170 | Develop public aquatic education programs to inform and educate user groups. |
| 6 | 175 | Work with municipalities, industries, and government agencies to reduce physical impacts of non-point and storm water runoff including Total Maximum Daily Loads (TMDL's) |
| 7 | 180 | Develop priorities and technology for reintroducing and enhancing aquatic populations. |
| 8 | 168 | Develop mitigation plan for impacted aquatic systems. |
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Appendix 3.6 Continued.

SMALL TO MEDIUM STREAMS - Aquatic Guild

The Small to Medium Streams guild includes four bivalve species. This is a broad category that includes small streams with sand and gravel substrates. This includes run, riffle, and pool habitat. The salamander mussel is generally associated with large flat rocks where its host, the mudpuppy, can be found (Parmalee and Bogan 1998). Many of the streams are less than 9 meters wide. These species are generally distributed throughout the state and are closely associated with their host fishes. Sites include Tygarts Creek for the creek heelsplitter, sections of the Interior Low Plateaus and Appalachian Plateaus Province for the rayed bean, slippershell, and salamander mussel.

Species

BIVALVIA - Mussel

Creek Heelsplitter, Rayed Bean, Salamander Mussel, Slippershell Mussel.

Top conservation actions for this guild.

Rank Code Conservation action

- | | | |
|---|-----|---|
| 1 | 164 | Restoration of degraded aquatic habitat through use of programs such as Fees in Lieu, or other federal grants. |
| 2 | 161 | Acquisition and conservation easements of critical aquatic habitat. |
| 3 | 158 | Financial incentives to protect riparian corridors and watersheds. |
| 4 | 163 | Coordinate and implement existing Farm Bill programs, or other federal incentive programs as applied to aquatic systems. |
| 5 | 159 | Encourage and assist in using, developing, and implementing Best Management Practices, including revision and evaluation as applied to aquatic systems. |
| 6 | 160 | Inform and educate user groups on significance and importance of riparian corridors and watersheds. |
| 7 | 168 | Develop mitigation plan for impacted aquatic systems. |
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Appendix 3.6 Continued.

UPLAND HEADWATER STREAMS IN POOLS - Aquatic Guild

The Upland Headwater Streams in Pools guild includes six fish species. This category is derived from the Upland Headwater Creeks Subsystem of the Riverine System (Burr and Warren, 1986). It applies specifically to slackwater or pool habitats in small headwater streams having high gradients and current velocities, and substrates consisting of boulder, cobble, pebble, and gravel with occasional patches of sand. Riffles and shoals constitute > 5-10% of the stream length. Streams in this category are range up to approximately 9 m (30 ft) in width (Jenkins et al., 1971), and are found in the Appalachian Plateaus Province, the Bluegrass, Shawnee Hills, and Highland Rim Sections of the Interior Low Plateaus Province, as well as the Tennessee River Plain of the Coastal Plain Province (Burr and Warren, 1986).

Species

ACTINOPTERYGII - Fish

Blackside Dace, Cumberland Arrow Darter, Cumberland Johnny Darter, Highland Rim Darter, Kentucky Arrow Darter, Kentucky Darter.

Top conservation actions for this guild.

Rank	Code	Conservation action
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- | | | |
|----------|-----|---|
| 1 | 158 | Financial incentives to protect riparian corridors and watersheds. |
| 2 | 161 | Acquisition and conservation easements of critical aquatic habitat. |
| 3 | 159 | Encourage and assist in using, developing, and implementing Best Management Practices, including revision and evaluation as applied to aquatic systems. |
| 4 | 164 | Restoration of degraded aquatic habitat through use of programs such as Fees in Lieu, or other federal grants. |
| 5 | 163 | Coordinate and implement existing Farm Bill programs, or other federal incentive programs as applied to aquatic systems. |
| 6 | 160 | Inform and educate user groups on significance and importance of riparian corridors and watersheds. |
| 7 | 176 | Develop, encourage, and initiate local watershed improvement initiative. |
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Appendix 3.6 Continued.

UPLAND STREAMS IN POOLS - Aquatic Guild

The Upland Streams in Pools guild includes nine fish and two bivalve species. This category is derived from the Riverine System (Burr and Warren, 1986). It applies specifically to slackwater or pool habitats in streams having high gradients and current velocities, and substrates consisting of boulder, cobble, pebble, and gravel with occasional patches of sand. Riffles and shoals constitute > 5-10% of the stream length. Streams in this category are range from approximately 9 – 61 m (30 – 200 ft) in width (Jenkins et al., 1971), and with only slightly developed floodplains. Streams in this category are found in the Appalachian Plateaus Province, the Bluegrass, Shawnee Hills, and Highland Rim Sections of the Interior Low Plateaus Province, as well as the Tennessee River Plain of the Coastal Plain Province (Burr and Warren, 1986).

Species

ACTINOPTERYGII - Fish

Ashy Darter, Blackfin Sucker, Blotched Chub, Duskytail Darter, Emerald Darter, Longhead Darter, Palezone Shiner, Sawfin Shiner, Splendid Darter.

BIVALVIA - Mussel

Green Floater, Little Spectaclecase.

Top conservation actions for this guild.

Rank	Code	Conservation action
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- | | | |
|----------|-----|---|
| 1 | 158 | Financial incentives to protect riparian corridors and watersheds. |
| 2 | 161 | Acquisition and conservation easements of critical aquatic habitat. |
| 3 | 159 | Encourage and assist in using, developing, and implementing Best Management Practices, including revision and evaluation as applied to aquatic systems. |
| 4 | 164 | Restoration of degraded aquatic habitat through use of programs such as Fees in Lieu, or other federal grants. |
| 5 | 163 | Coordinate and implement existing Farm Bill programs, or other federal incentive programs as applied to aquatic systems. |
| 6 | 160 | Inform and educate user groups on significance and importance of riparian corridors and watersheds. |
| 7 | 176 | Develop, encourage, and initiate local watershed improvement initiative. |
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Appendix 3.6 Continued.

UPLAND STREAMS IN RIFFLES - Aquatic Guild

The Upland Streams in Riffles guild includes 11 fish and nine bivalve species. This category is derived from the Riverine System (Burr and Warren, 1986). It applies specifically to riffle habitats in streams having high gradients and current velocities, and substrates consisting of boulder, cobble, pebble, and gravel with occasional patches of sand. Riffles and shoals constitute > 5-10% of the stream length. Streams in this category are range from approximately 9 – 61 m (30 – 200 ft) in width (Jenkins et al., 1971), and with only slightly developed floodplains. Streams in this category are found in the Appalachian Plateaus Province, the Bluegrass, Shawnee Hills, and Highland Rim Sections of the Interior Low Plateaus Province, as well as the Tennessee River Plain of the Coastal Plain Province (Burr and Warren, 1986).

Species

ACTINOPTERYGII - Fish

Bloodfin Darter, Frecklebelly Darter, Olive Darter, Slender Madtom, Smallscale Darter, Spotted Darter, Stargazing Minnow, Stone Darter, Striped Darter.

CEPHALASPIDOMORPHI - Lamprey

Mountain Brook Lamprey, Northern Brook Lamprey.

BIVALVIA - Mussel

Cumberland Bean, Cumberland Elktoe, Cumberland Moccasinshell, Cumberland Papershell, Littlewing Pearlymussel, Purple Lilliput, Snuffbox, Tan Riffleshell, Tennessee Clubshell.

Top conservation actions for this guild.

Rank	Code	Conservation action
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- | | | |
|----------|-----|---|
| 1 | 158 | Financial incentives to protect riparian corridors and watersheds. |
| 2 | 161 | Acquisition and conservation easements of critical aquatic habitat. |
| 3 | 159 | Encourage and assist in using, developing, and implementing Best Management Practices, including revision and evaluation as applied to aquatic systems. |
| 4 | 164 | Restoration of degraded aquatic habitat through use of programs such as Fees in Lieu, or other federal grants. |
| 5 | 163 | Coordinate and implement existing Farm Bill programs, or other federal incentive programs as applied to aquatic systems. |
| 6 | 160 | Inform and educate user groups on significance and importance of riparian corridors and watersheds. |
| 7 | 176 | Develop, encourage, and initiate local watershed improvement initiative. |
| 8 | 180 | Develop priorities and technology for reintroducing and enhancing aquatic populations. |
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